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ABSTRACT

Northeastern University (Boston) offers an internship program to train technical writers for the computer industry. The program is designed for 20 individuals with bachelor's degrees and writing experience. Students attend classes at night, taking one computer science course and one graduate level writing course per academic quarter. The computer science courses are taught by faculty members of the math department and include basic computer languages and an internship. The sequence of writing courses includes writing operating instructions and a programing reference manual. Students in paid internships as technical writers or editors work 30 to 40 hours per week, while attending classes at night. Although the initial response to the program was positive, the majority of companies contacted expressed reservations about taking interns, citing among other reasons the time required to bring a new person "up to speed." Problems inherent to an internship program include (1) unqualified applicants; (2) the paradox that a quality intern may be hired full time, thus eliminating a future internship opening; and (3) industry's need for more practical training programs but its capacity to hire only a fraction of the resulting graduates. Careful selection of applicants, faculty and administrator liaisons to industry, and a firm industry commitment to the program can help eliminate possible problems and keep the internship concept sound. (HTH)

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ANSWERING INDUSTRY'S NEEDS: AN INTERNSHIP TRAINING PROGRAM FOR TECHNICAL WRITERS

ABSTRACT

Northeastern University offers an internship program to train technical writers for the computer industry. The one-year, non-degree program includes courses in computer science and software documentation. The six-month, paid internships provide experience that is indispensable to technical writing job candidates in the Boston area. The internships also allow students to realistically evaluate their decisions to become technical writers. Finally, the internships provide employers with trained, professional job candidates who will work without a company's commitment to hire them.

BACKGROUND

Northeastern University's Technical Writing Internship Training Program was created in response to a perplexing situation. During the last few years, computer industries in the Boston area found they had an increasing need for trained technical writers and other professionals, an increasing number of highly educated but untrained applicants, and few educational institutions willing to provide the necessary training.

Based on a 1980 survey, the Massachusetts High Technology

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Council (representing approximately 95 area industries) projected professional and paraprofessional hiring needs. Stating that expenses limited out of state recruiting, the High Tech Council urged area colleges and universities to provide professional training for potential employees in the Boston area.

The need for professional training in the Boston area was exacerbated by a further development. In 1981, Proposition 2½, a property-tax reform, was approved. The measure, supported by the High Tech Council, was intended in part to decrease property taxes paid by industries. In the aftermath of necessitated budget cuts, however, between 900 and 1000 Boston school teachers were laid off. As the general economic situation worsened, increasing numbers of highly educated professionals turned from federal, state, and city positions to the private sector for jobs. Not surprisingly, many former teachers joined Ph.D.s, frustrated in their job search, and recent liberal arts graduates in seeking jobs as technical writers. During 1981 it became extremely difficult--if not impossible--for these people with writing skills but no technical background or technical writing experience to get jobs as writers in area computer firms.

Northeastern and Boston

Northeastern is an urban university with a history of responding to the needs of many Boston communities. Requirements the business and industrial communities have placed on students have generated new programs and new courses at Northeastern. As one of the largest Cooperative Plan universities in the world, North-

eastern has two outstanding characteristics: an involvement with surrounding businesses and industries, and a strong commitment to employment as an integral part of education.

This unique academic environment made it possible for Tim Perkins, Assistant Dean of the College of Arts and Sciences, to respond quickly to the High Tech Council's call for technical education. Perkins began outlining a program that would combine a high percentage of computer science courses with technical writing instruction, and paid internships as technical writers or editors in the computer industry.

THE TECHNICAL WRITING INTERNSHIP TRAINING PROGRAM

In June 1981, I began working with Dean Perkins on the Internship program. The program is designed for twenty individuals with bachelor's degrees and writing experience. The classes meet at night to accommodate students who are working full time. The writing courses are graduate level English courses. The computer science courses are structured to provide as much exposure to languages and computing systems as possible over one year (four quarters at Northeastern). Throughout the year, students take one computer science course and one technical writing course per quarter.

The program began in September 1981.

Computer Science Courses

The computer science courses are taught by faculty members of the Mathematics Department at Northeastern. The courses are:

BASIC, PASCAL, Computer Organization and Information Structures, and Computer Operating Systems. These courses are offered in sequence, and are designed for the internship students, the majority of whom have no previous computer experience.

To enhance these courses, five video displays and one Decwriter were purchased. These terminals communicate with the university's VAX-11, a Digital Equipment Corporation system.

Technical Writing Courses

There is a sequence of four technical writing courses, which I teach.

During the first quarter, the students completed five short assignments on a variety of technical subjects. The last month of the quarter was spent writing operating instructions for the system on which the students work. The instruction manuals included:

1. Descriptions of the hardware,
2. Instructions for using the keyboard,
3. Logging on and other simple operating instructions,
4. Running a simple BASIC program,
5. Creating and deleting a file,
6. Getting a hard copy, and
7. Logging off.

Each manual provided a table of contents, an index, a glossary, and extensive graphics.

At the start of the winter quarter, the students will exchange

operator's manuals, test and edit each other's work, and make revisions to their own manuals. This process is intended to simulate the review cycle a technical writer follows.

During the second quarter, the students will write a brief programming reference manual. This manual will include instructions for running a more complex program in BASIC or PASCAL, necessary reference information, and error resolution. Each manual will have a table of contents, glossary, index, supporting graphics, and sample printouts and screens where they are helpful. The test, edit, and revision cycle will be followed.

During the third and fourth quarters, students will work on written projects related to their programming work and the writing that they are doing in their internships.

Internships

The students are scheduled to begin paid internships as technical writers or editors in April 1982. They will work 30 to 40 hours per week, and will continue to attend classes at night.

THE STUDENTS

For admission to the Internship program, applicants were asked to submit the following: two or more writing samples, undergraduate or graduate transcripts, and an application form. The applicants also took the SRA Computer Programmer Aptitude Battery and an Englsih skills test. The scores on the SRA test were a significant factor in admissions choices, as were the writing samples.

In the early stages of advertising, we received as many as 200 inquiries per week. Many of these people wanted little more than career counseling; often they had no idea what technical writing was.

Twenty applicants were selected for the program. Of these twenty, two had Ph.D.s (English and Philosophy), eight had master's degrees, and six had taken courses beyond the bachelor's degree. Three had previous programming courses or experience working with computers. We selected students with a wide range of scores on the SRA test, including two very good writers with very low scores. (Both of the latter students withdrew from the program after three weeks. One was a journalist who writes children's plays. His sentiments seemed to be that he had barely escaped a life sentence.)

All of the internship students are making career transitions. Two are leaving academic careers; two others were high school teachers. One has worked in data processing for three years. The remaining students have held a number of jobs. From them emerges a small group that has moved rapidly through a series of possible careers. (Evidence of these "checkered careers" was noticeably missing from their application materials.)

Such notes about credentials and past experience quickly became significant. In three weeks, the two Ph.D.s, a former Latin teacher and a data processing professional distinguished themselves in both programming and writing courses. A middle group made good progress in the BASIC course, and produced consistently good writing. The remainder are struggling with BASIC

and having some difficulty in the writing course. The last group includes some of those students who are having difficulty settling on a career.

Not surprisingly, the last students often have been discontent with the Internship program. The "If I'm not happy, it's not fair" philosophy dominated the group for some weeks. Complaints were largely directed against the computer science teacher, and anxiety over both programming and placement in internships was rampant. The students' financial and time commitment to the program led them to take a strong stand about their experience in the classroom. They argued successfully for a new computer science teacher to begin the second quarter.

Like the difference between the students' levels of academic success, their responses to the job situation differ widely. By January, four students had achieved a high enough level in both programming and writing to apply for internships or full time jobs beginning immediately. Another group--those with mid-level achievements--was willing to remain in the classroom to reach proficiency. This group is concerned about internship placement, but is not desperate. The last group shows a myriad of responses, ranging from abject passivity (they have trouble writing resumes and will not consider job hunting) to disdain over internships or jobs at less than $15,000 per year.

There is no one in the Internship program who believed--rightly or wrongly--that he or she could get a job as a technical writer without it. Consequently, the administrators and teachers

in the program often function as career and employment counselors. There is a massive transfer of responsibility in this program. Unlike other students who by and large make job seeking efforts themselves, many of these students have shifted the burden--with alacrity--to anyone connected with the program.

THE INDUSTRY

Since representatives of DEC, Prime, Raytheon, and others spoke with Dean Perkins in late 1980, he and I have been contacting industry representatives to secure internships. The results have been modest. As of January 1982, we had five probable positions for April. Three of these came from early industry advisors to the program.

Although the initial response to the program was positive, the majority of companies have serious reservations about taking interns.

The most openly acknowledged reason companies decline to take an intern is that they feel it takes six months to bring the new person "up to speed." At that time, the internship would end, and they may see their time as having been wasted. This also can be measured financially. A company paying $15,000 to a new employee will not recoup this salary until the employee has been there long enough to be fully productive. The recovery of investment may not happen in an internship situation.

Another open reason for hesitancy is the general economic situation. In December, Boston area high tech firms including

Honeywell, DEC, and Raytheon either laid off employees or closed plants over the year end holidays. They are reluctant to talk about new financial commitments at this time.

A third reason for industry's reluctance was offered by Northeastern's co-op placement counselors. They explained that a co-op or intern over 21 years old has the legal right to collect unemployment compensation when the internship is terminated. The industry pays not only the intern's salary, but the company's share of social security, workman's compensation, and unemployment compensation. Understandably, a company might view this expense as exorbitant for a short term employee.

Finally, one can only speculate that companies are wary of what they view as "retread" applicants. It appears less risky to hire a student out of college than a 30-year-old applicant who has taught for seven years. Adjectives industry representatives and others use to describe internship students are: "older," "inflexible," "retreads," and, the greatest indictment of all--"school teachers." Sadly, the words "intelligent," "committed," "mature," and "professional" never come up.

PROBLEMS WITH AN INTERNSHIP PROGRAM

There are many problems in an internship program. The first concerns potential students. Few applicants screen themselves out. "Technical writing" sounds general enough that people who "liked writing" in high school are as likely to apply as those who are creative writers with no notion of either technol[illegible]or

industry. Additionally, many people who embark on an internship program do it for the "guaranteed" job placement. They are often discouraged job seekers, and are happy to share the responsibility for the job search. Still others are simply out of work and untrained; they are willing to grasp at any program that appears to guarantee financial and job security.

The second problem is inherent in an internship situation. If an intern is successful at work, the employer is likely to offer the student a full time job. Once that happens, the internship slot has disappeared. Unless the company is in a situation in which they continuously need new technical writers, it may be months before that company can open up another slot for a new intern.

A corollary problem is location. In an internship program in which classes continue during the working months, the students cannot work out of state. Thus potential employers from New York, New Hampshire, or even Nebraska cannot be called upon to provide internships.

The final problem is with the high tech industry. An officer of the High Tech Council admitted that they asked educational institutions to create more practical training programs and then declined to hire more than a fraction of the students from these programs. This has proved true for co-op, internship, and full-time placements. Without industry support, there simply cannot be internship programs.

SOLUTIONS

The basic concept behind the internship program seems sound. It offers excellent job candidates to industry. By the time the students are available for internships, they have a minimum of six-months of programming and technical writing experience. Equally important, they are still in the program. Students without programming aptitude or writing ability will have dropped out. Those who are making extreme transitions--for example, from teaching Latin or philosophy--will know after six months if they can honestly be committed to a career in industry. The program screens out people whom a company might hire, train, and then lose.

Three conditions can make an internship program not only viable but successful. They are: carefully selected applicants; faculty and administrators willing to be liaisons to industry; and a firm industry commitment to the program.

Guidelines to screening applicants have emerged from our experience. Applicants with advanced degrees, high grades, high SRA test scores, and many years at a single job are the most successful. Previous programming experience is an asset. The internship program requires a long-term commitment and long hours of professional work. Those individuals who are already serious and committed excell in this situation. Those who are grasping at high tech straws do not.

Second, an internship program requires administrators and faculty who are comfortable with both industry and students. The program must be flexible enough to change if job requirements

seem to demand a change; COBOL may replace BASIC or PASCAL. At the heart of the academic issue is the knowledge that the aim of an internship program is to get people jobs. The touchstone for each course and each exercise must be whether it contributes to training students to be technical writers in industry. And, of course, academics running an internship program must spend long hours doing the double duty of wooing industry for internships and counseling students on career changes.

Finally, and most important, an internship program must have a commitment from area industries. An internship is not an academic exercise; it is one of the closest relationships an educational institution can have with industry.